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Constraints on ocean carbonate chemistry and p_{CO_2} in the Archaean and Palaeoproterozoic

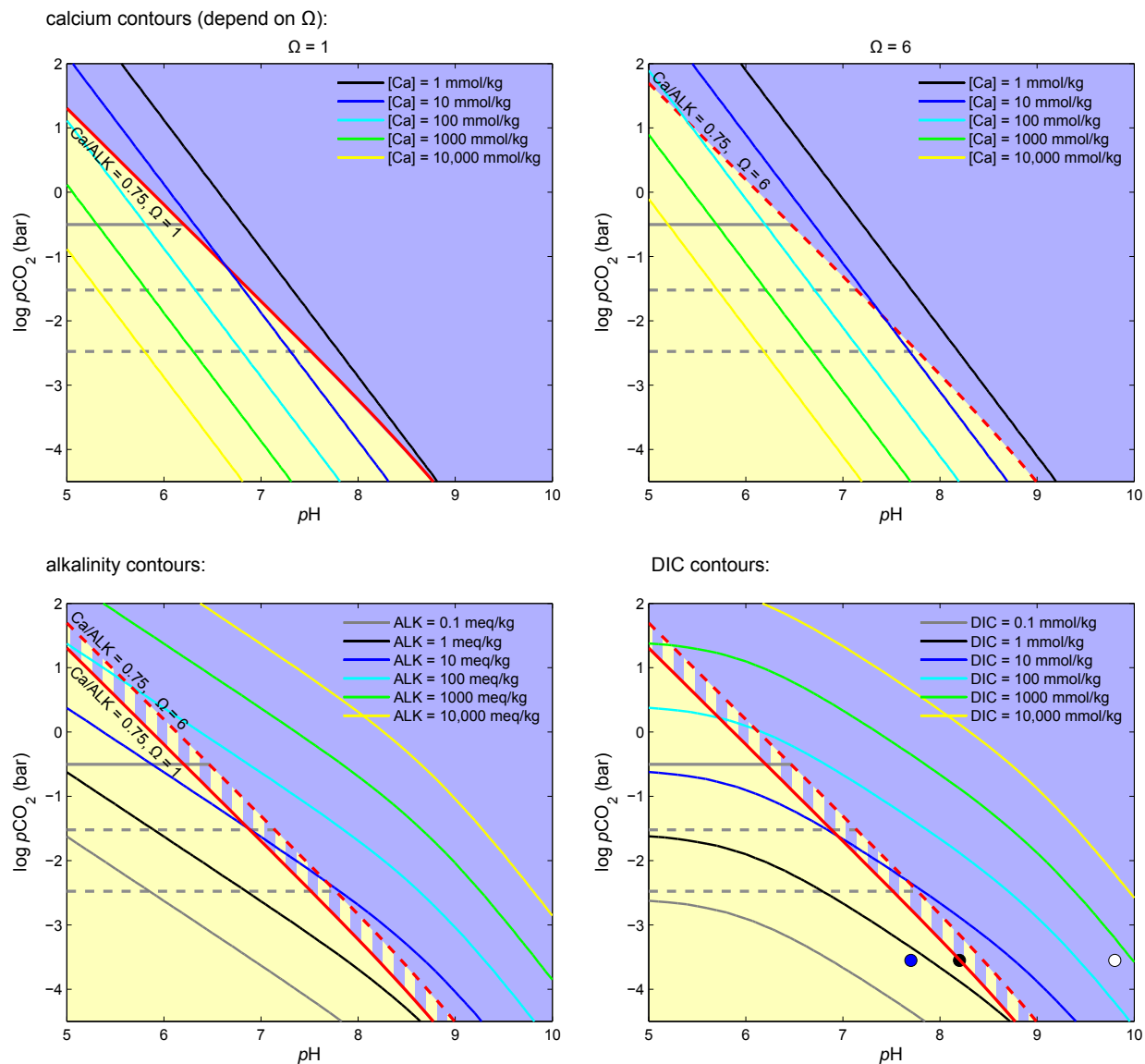
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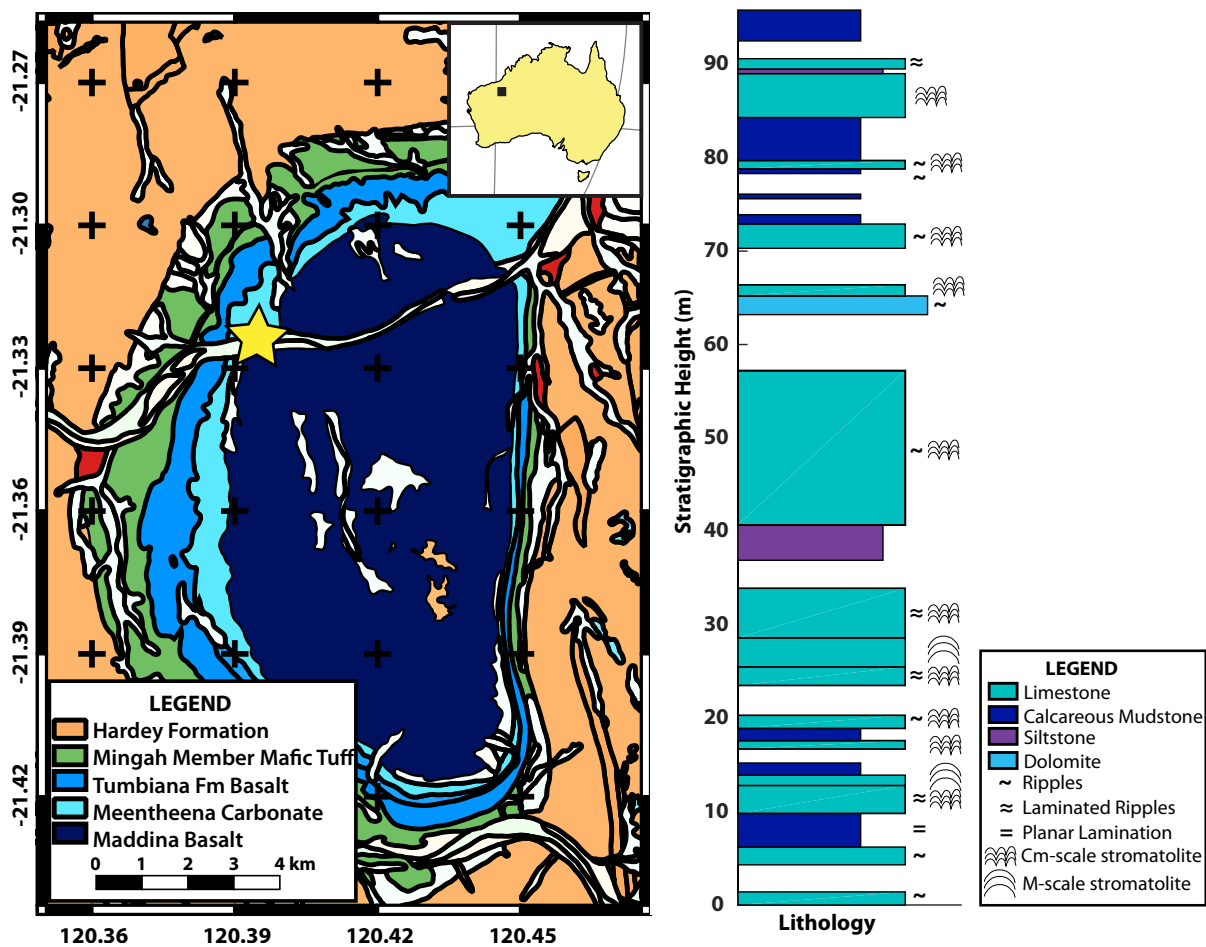
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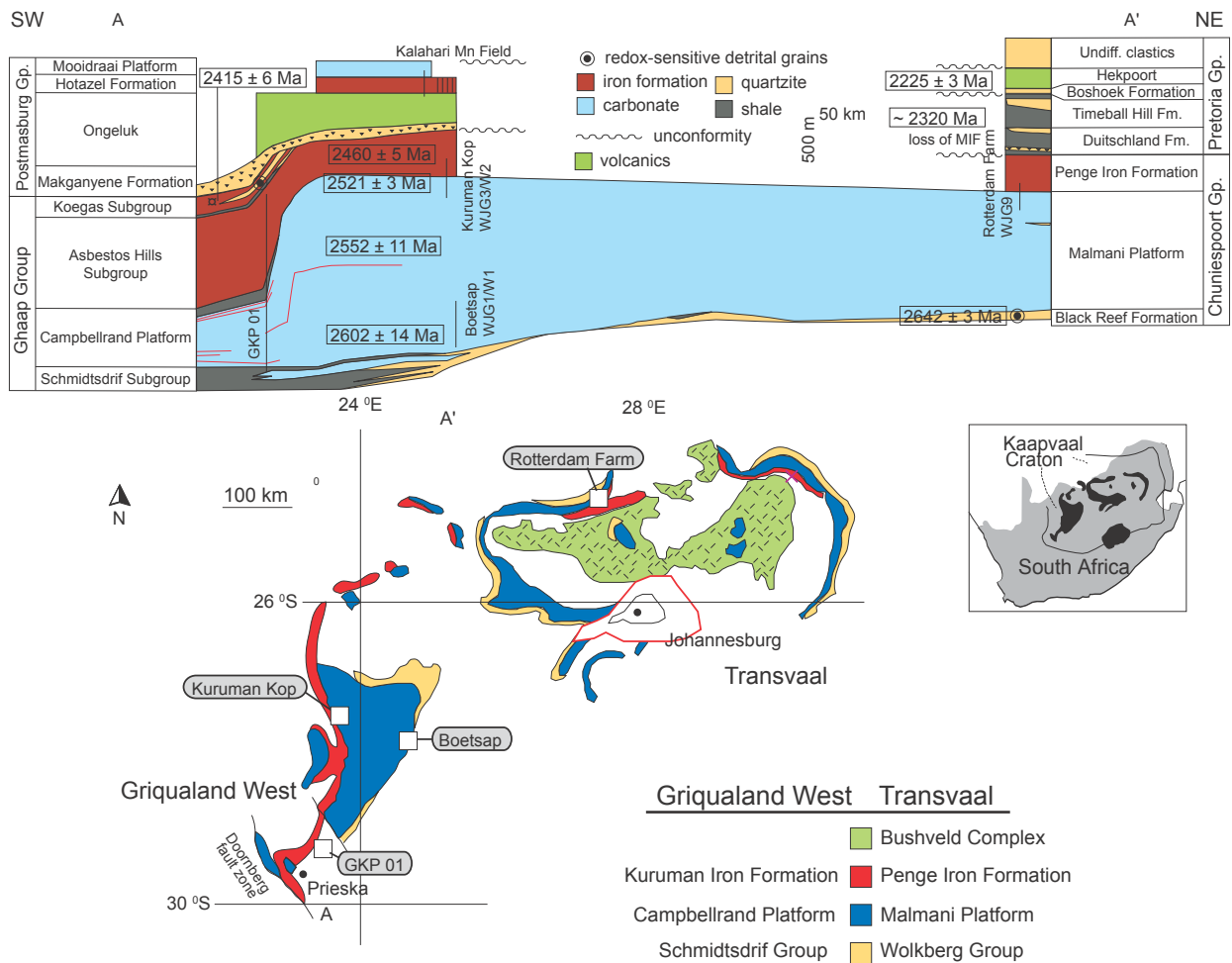
Supplementary Figure 1: Contours of calcium concentration ([Ca]), alkalinity, and DIC, as defined in the main text. Calcium contours are shown under conditions of $\Omega = 1$ and $\Omega = 6$. Note that contours are drawn at order-of-magnitude spacing, with remarkably (and improbably) high values at the upper end of the plotted range. Other features of the figure follow the description in Figure 3 (main text), with yellow areas reflecting the solution space consistent with calcium isotope data in this study.



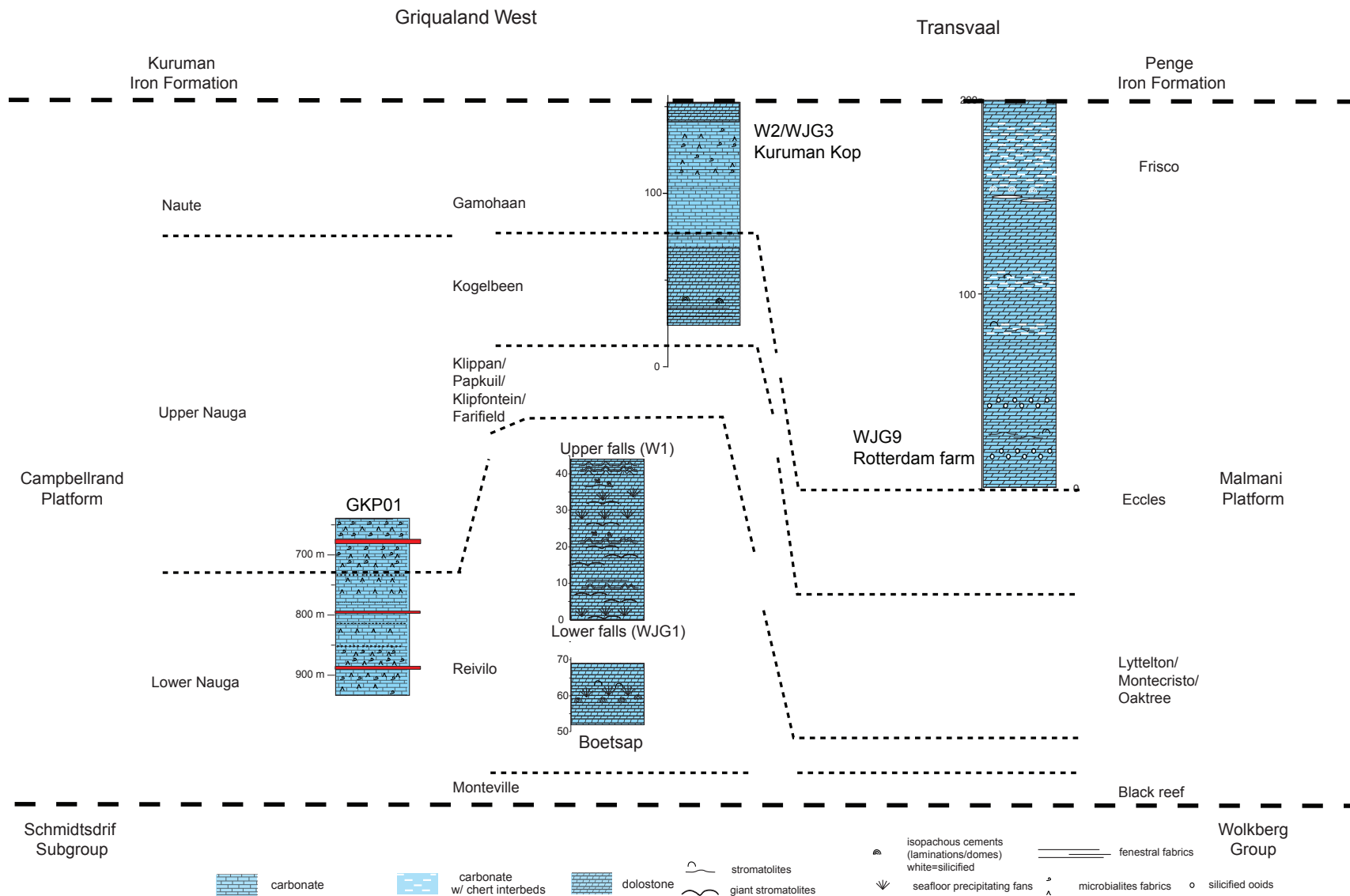
Supplementary Figure 2: Map of sampling locality for the Tumbiana Formation at Meentheena, Western Australia and stratigraphic log of the measured section.



Supplementary Figure 3: Field photographs of representative stromatolitic facies, from cm- to m-scale, from the Tumbiana Formation.



Supplementary Figure 4: Regional geological map of the Campbellrand-Malmani Platform and cross-section showing sampled sections.

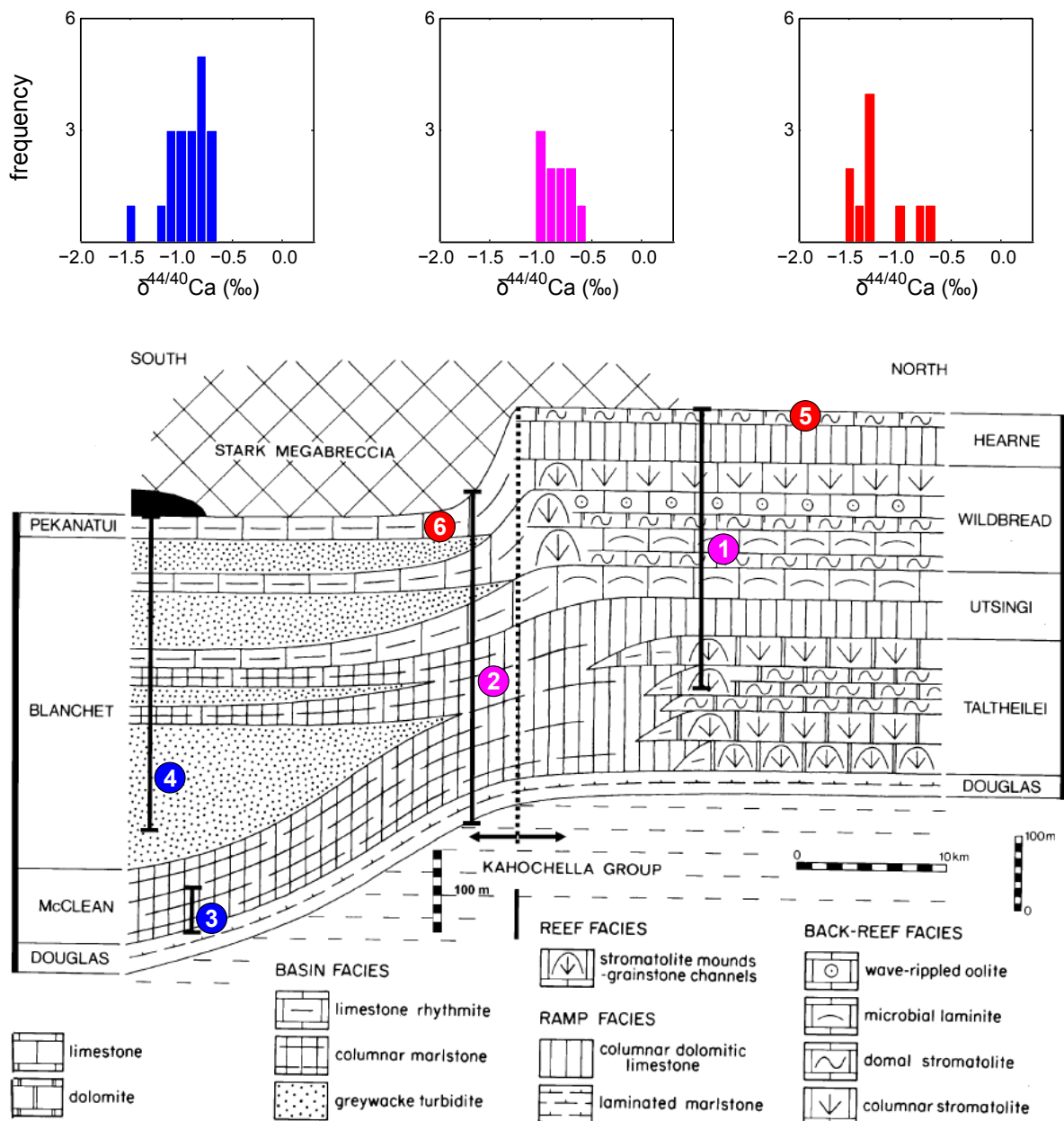


Supplementary Figure 5: Stratigraphic logs and correlations of sampled sections in the Campbellrand-Malmani Platform.

deepwater (basin) facies,
McClean and Blanchet Fms
(samples P3, P4, and P5 from
sections 3 and 4 in Hotinski et
al., 2004)

shallow (platform/reef) facies,
Talttheilei, Utsingi, Wildbread,
and Hearne Fms (samples
PP2, PP3, and PP4 from
sections 1 and 2 in Hotinski
et al., 2004)

most evaporitic facies,
Pekanatui and Hearne Fms
(samples P6 and P7 from
sections 5 and 6 in Hotinski
et al., 2004)



Supplementary Figure 6: Geological cross-section of the Pethei Group platform and slope, adapted from Hotinski et al.²¹ with original architecture from Hoffman¹⁶.